

I CLAIM:

1. An article comprising:
a porous expanded PTFE material having a microstructure defined by
5 nodes interconnected by fibrils wherein the nodes are aligned to form one or
more columns in the thickness direction of the material, and
at least one polymer resin selected from the group consisting of
thermoset resins and thermoplastic resins distributed within the pores of the
expanded PTFE.
- 10 2. The article of claim 1, wherein said one or more columns comprises a
plurality of nodes.
3. The article of claim 1, wherein said one or more columns comprises a
single node.
- 15 4. The article of claim 1, wherein said at least one polymer resin comprises
an epoxy.
5. The article of claim 1, wherein said at least one polymer resin comprises
a polyimide.
6. The article of claim 1, wherein said expanded PTFE comprises two or
20 more layers of expanded PTFE.
7. The article of claim 1, wherein said expanded PTFE further includes at
least one filler.
8. The article of claim 1, in the form of a sheet.
9. The article of claim 1, in the form of a tube.
- 25 10. The article of claim 1, wherein said article further comprises a pressure
sensitive adhesive bonded to said article.
11. The article of claim 1, further comprising at least one substrate bonded
to said article.
12. The article of claim 11, wherein said at least one substrate comprises at
30 least one material selected from the group consisting of metal and epoxy.
13. A bearing material comprising:
a porous expanded PTFE material having a microstructure defined by
nodes interconnected by fibrils wherein the nodes are aligned to form one or
more columns in the thickness direction of the material, and

at least one wear resistant polymer resin distributed within the pores of the expanded PTFE.

14. The bearing material of claim 13, wherein said one or more columns comprises a plurality of nodes.

5 15. The bearing material of claim 13, wherein said one or more columns comprises a single node.

16. The bearing material of claim 13, wherein said at least one polymer resin comprises an epoxy.

17. The bearing material of claim 13, wherein said at least one polymer
10 resin comprises a polyimide.

18. The bearing material of claim 13, wherein said expanded PTFE structure comprises two or more layers of expanded PTFE.

19. The bearing material of claim 13, wherein said expanded PTFE further includes at least one filler.

15 20. The bearing material of claim 13, in the form of a sheet.

21. The bearing material of claim 13, in the form of a tube.

22. The bearing material of claim 13, in the form of a wear-resistant surface.

23. The bearing material of claim 13, in the form of a bearing.

24. The bearing material of claim 13, in the form of a washer.

20 25. The bearing material of claim 13, in the form of a clutch.

26. The bearing material of claim 13, in the form of a tensioning device.

27. The bearing material of claim 13, wherein said article further comprises a pressure sensitive adhesive bonded to said bearing material.

28. The bearing material of claim 13, further comprising at least one
25 substrate bonded to said bearing material.

29. The bearing material of claim 28, wherein said at least one substrate comprises at least one material selected from the group consisting of metal and epoxy.

30. An article comprising:

30 a composite comprising a porous expanded PTFE material having a microstructure defined by nodes interconnected by fibrils wherein the nodes are aligned to form one or more columns in the thickness direction of the material, and

at least one polymer resin selected from the group consisting of thermoset resins and thermoplastic resins distributed within the pores of the expanded PTFE; and

a substrate bonded to said composite.

5 31. The article of claim 30, wherein said one or more columns comprises a plurality of nodes.

32. The article of claim 30, wherein said one or more columns comprises a single node.

33. The article of claim 30, in the form of a wear-resistant surface.

10 34. The article of claim 30, in the form of a bearing.

35. The article of claim 30, in the form of a washer.

36. The article of claim 30, in the form of a clutch.

37. The article of claim 30, in the form of a tensioning device.

38. The article of claim 30, wherein said at least one polymer resin
15 comprises an epoxy.

39. The article of claim 30, wherein said at least one polymer resin comprises a polyimide.

40. The article of claim 30, wherein said expanded PTFE comprises two or more layers of expanded PTFE.

20 41. The article of claim 30, wherein said expanded PTFE further includes at least one filler.

42. The article of claim 30, in the form of a sheet.

43. The article of claim 30, in the form of a tube.

44. A method of forming a bearing material comprising:

25 providing a porous expanded PTFE material having a microstructure defined by nodes interconnected by fibrils wherein the nodes are aligned to form one or more columns in the thickness direction of the material;

imbibing in at least a portion of the porosity at least one polymer resin selected from the group consisting of thermosetting resins and thermoplastic
30 resins; and

curing said at least one polymer resin.

45. The method of claim 44, further comprising bonding said imbibed expanded PTFE material to a substrate.